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## BALD EAGLES WINTERING ON THE NEOSHO RIVER, OKLAHOMA

By JAMES W. LISH

**T**HE fact that the Bald Eagle (*Haliaeetus leucocephalus*) winters regularly around several of Oklahoma's large reservoirs has not been widely publicized.



**BALD EAGLE**

*An immature bird photographed by James W. Lish along the Neosho River in northeastern Oklahoma on 19 February 1970.*

While Bald Eagles of the large northern race, *H. l. alascamus*, "probably visit Oklahoma from time to time," the very few specimens thus far taken in the state are of the small, southern, nominate race (Sutton, 1967, Oklahoma birds, pp. 117-18), a form that has declined in numbers so rapidly within recent decades that it is now listed as endangered (Office of Sport Fisheries and Wildlife Resource Publication 114). Research on the ecology of Bald Eagles that winter in Oklahoma and in other parts of the Southern Great Plains has been sorely neglected. Learning about the requirements of these wintering birds is an important step toward preserving them.

From October 1968 through November 1971 I made numerous observations of wintering Bald Eagles on the Neosho River Arm of Lake of the Cherokees (Grand Lake) in Ottawa County, northeastern Oklahoma, paying special attention to feeding habits, behavior, and population trends. The study area, located at the confluence of the Neosho River and Sycamore Creek, included 7.5 square miles of mudflats and shallow water. Johnson (1960, *Southwest. Nat.*, 6: 107) observed 65 Bald Eagles at a roost in this area in February 1959. Cooksey (1962, Master of Science Thesis, Kansas State College of Pittsburg) counted 183 eagles at the same roost in January 1962. I estimated that 50 eagles wintered in the area in 1968-69, and probably about the same number were there the following two winters. I observed the eagles with a 7 x 35 binocular and a 20X spotting scope. A 17 ft. long square-sterned canoe with 4 hp. outboard motor gave me excellent mobility. Often I used one of two blinds, each made of driftwood and camouflaged mosquito netting.

I entered one blind or the other before sunrise and spent 6-10 hours per week there, observing the eagles. The birds used certain trees repeatedly for perching and feeding, and under these trees prey remains accumulated. I never saw an eagle feeding except at one of the five widely separated feeding perches,

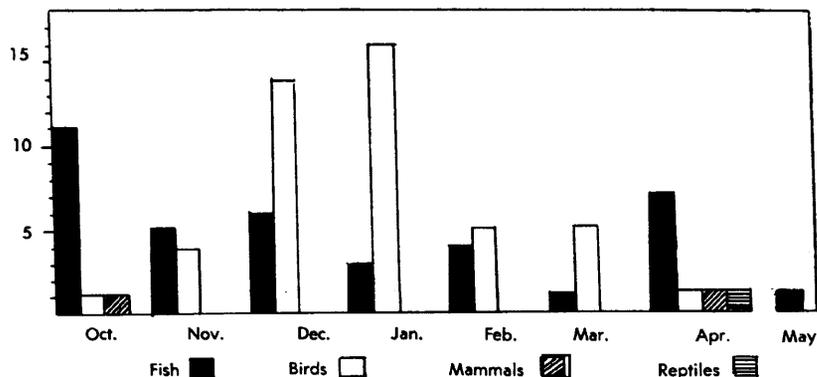


Fig. 2. Prey remains found beneath eagle perches, Neosho River, Oklahoma.

each of which was well above ground. Below these perches I collected prey remains every two or three weeks. Conspicuous unpaired bones (e.g., skulls and sternums) that could be counted as one animal I identified and kept, but other bones I discarded to avoid counting any prey item more than once. Of the 96 prey items found, 56 were birds (mostly waterfowl), 37 fish, 2 mammals, and 1 a reptile (Table I). Two perches that seemed to be especially attractive

Table I  
Prey remains found beneath eagle perches, Neosho River, Oklahoma,  
October-May, 1968-1971.

Prey Species	Perch designation and numbers of prey					Total
	A	B	C	D	E	
Common Merganser ( <i>Mergus merganser</i> )	2	4	13	5	9	33
American Coot ( <i>Fulica americana</i> )	1	1	3	1	2	8
Horned Grebe ( <i>Podiceps auritus</i> )			11	1		12
Snow Goose ( <i>Chen caerulescens</i> )		1				1
White Pelican ( <i>Pelecanus erythrorhynchos</i> )					1	1
Great Blue Heron ( <i>Ardea herodias</i> )			1			1
Channel Catfish ( <i>Ictalurus punctatus</i> )	2	1	7	4	5	19
White Bass ( <i>Roccus chrysops</i> )	1		2		1	4
Carp ( <i>Cyprinus carpio</i> )	2	1	3	2	5	13
Longnose Gar ( <i>Lepisosteus osseus</i> )			1			1
Opossum ( <i>Didelphis marsupialis</i> )			1			1
Fox Squirrel ( <i>Sciurus niger</i> )					1	1
Common Snapping Turtle ( <i>Chelydra serpentina</i> )	1					1
Totals	9	8	42	13	24	96

to the eagles provided a good view of areas in which hundreds of waterfowl, mostly Common Mergansers (*Mergus merganser*) and American Coots (*Fulica americana*), used the shallow water and mudflats for feeding and loafing from December through February. The fact that few mammals and reptiles were taken as prey may indicate that these were difficult to find in winter. Sutton (*op. cit.*, p. 116), who stated that the Bald Eagle "probably feeds largely on fish while in Oklahoma," mentioned some mammalian but no avian prey.

Southern (1963, *Wilson Bull.*, 75: 42-55), who found both Bald Eagles and Common Mergansers wintering along the Mississippi River in Illinois, obtained no evidence that the eagles fed on the mergansers. My studies show that significant numbers of fish are eaten by Bald Eagles in northeastern Oklahoma in October, November, and April, but that from December through March waterfowl are the principal prey (Fig. 1). Judging from skeletal size, the carp and catfish eaten weighed from 2 to 4 lbs. each, while the average for birds was probably near 2 lbs. In terms of total pounds consumed, then, fish were the most important food except during the coldest part of the winter, when they may not have been readily available except as carrion. I never saw an eagle capture prey or pick up carrion, though I did observe 24 unsuccessful attempts to capture live prey, mostly fish. Along the Mississippi River in Illinois, Southern (*loc. cit.*, p. 47) noted "several unsuccessful attempts to capture mergansers." It occurs to me that since the water near the mudflats in my study area was nowhere much more than 18 in. deep, some mergansers, grebes, and coots might have been captured while submerged.

There was evidence of an established peck order among the eagles on my study area. When several eagles were in one tree, the highest perch was always occupied by what appeared to be the most aggressive bird. This was true among both immature birds and adults. When several eagles perched in one tree, a typical arrangement from the lowest position upward was an immature bird, a more aggressive immature bird, an adult, and a large, aggressive adult. This system of ranking, which may, admittedly, have varied with the hunger of the birds, was apparent also during feeding activities. When eagles fed on a deer carcass (roadkill) that I set out, the immature birds fed last. I find in the literature no mention of this sort of behavior among Bald Eagles.

On 12 and 13 January 1970 I made a point of plotting the full day's movements of an immature eagle, an individual easily recognized by a large number of light feathers on its body and a missing primary wing feather. On each of the two days the bird left the roost area shortly after daybreak. I watched it until it alighted, then moved the canoe to a location from which I could make further observations. When the bird flew to another perch, I followed in the canoe. All flights were made along the river's course rather than across land. On 12 January it left the roost at 06:25 and flew to Perch A, where it remained until 11:40, when it circled the mudflats and alighted at Perch B (Fig. 2). At 12:15 it flew to Perch C. At 12:25 it flew to Perch D, where it remained until 16:45. At this time it flew toward Perch A where, rather than alighting, it circled and returned to the roost area. During this 10½-hour period the eagle flew a minimum straight-line distance of 13 miles and patrolled a 2-square-mile area without either capturing prey or eating. On 13 January it patrolled the same area, flying about the same total distance and using the same perches,

though in different order, and again without capturing prey. During foodless periods of this sort an eagle presumably subsists on stored fat.

I counted the eagles of the entire study area each week, usually on three days of each week, usually noting where each bird was, whether it was immature or adult, and the time of day in which I saw it. The maximum number of eagles counted at any one time was 38 — on 18 December 1969. On that cold day (at Miami, Oklahoma, minimum air temperature 42° F., maximum

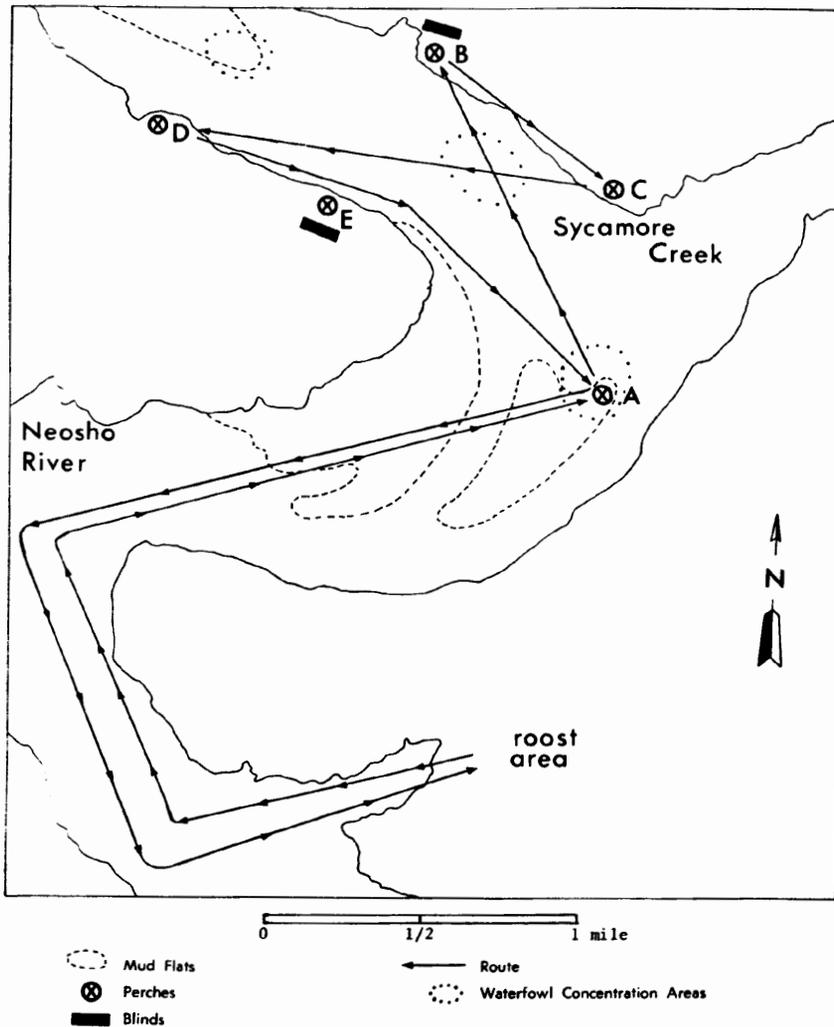


Fig. 1. Route taken by one Bald Eagle during a period of 10½ hours, 12 January 1970.

54° F., lows during five preceding days all below freezing) the birds were in trees and also on the ice. During my systematic censuses from 1968 through 1971 I recorded 316 eagle sightings, 182 (57%) of which were of adult birds, 133 (43%) of immature birds. My earliest date for an eagle was 17 October 1968, my latest date 11 May 1969. Sutton (*op. cit.*) stated that the Bald Eagle is seen in Oklahoma "from October 1 to April 25." My seven May sightings were all of immature birds, and never more than one bird on a given day. The average number of eagle sightings per hour was 0.35 in October, 0.95 in November, 1.5 in December, 1.1 in January, 0.91 in February, 0.50 in March, 0.90 in April, 0.10 in May. The highest population density was reached each winter in December, followed by a steady decline until April, when a slight increase may have indicated that the study area was being used during spring migration as a staging area by eagles that had wintered elsewhere.

I wish to thank James C. Lewis of the Oklahoma Cooperative Wildlife Research Unit for his assistance in the preparation of this paper.

OKLAHOMA COOPERATIVE WILDLIFE RESEARCH UNIT, 404 LIFE SCIENCES BLDG., OKLAHOMA STATE UNIVERSITY, STILLWATER, OKLAHOMA 74074, 19 JUNE 1973.

## GENERAL NOTES

**Third specimen of Common Tern for Oklahoma.**—At about 07:00 on 19 October 1971—a mild morning—my husband, A. M. Mery, collected a Common Tern (*Sterna hirundo*) at Hulah Reservoir in Osage County, northeastern Oklahoma. The bird was flying low near a floating duck blind about 350 yards from shore at the north end of the reservoir's northeastern cove; its smallness, graceful flight, and forked tail were noticeable. Not far from the blind were scattered Ring-billed Gulls (*Larus delawarensis*), Franklin's Gulls (*L. pipixcan*), and Bonaparte's Gulls (*L. philadelphia*).

The tern specimen (UOMZ 7246) proved to be a female in complete first winter feather. It is the third specimen of *Sterna hirundo* for Oklahoma. The first, a fully adult male in changing feather (UOMZ old no. 13,871), was taken on 3 July 1929 on the Illinois River near Gore, Sequoyah County (Bird, 1930, Auk, 47: 269; Nice, 1931, Birds of Oklahoma, p. 97; Sutton, 1967, Oklahoma birds, p. 223). The second, a female largely in first winter feather (UOMZ 7197), and a banded bird, was taken on 4 September 1971 at Lake Hefner, Oklahoma County (Roberts, 1973, Bull. Oklahoma Orn. Soc., 6: 21). In this September specimen some of the innermost secondaries and several of the scapulars are juvenal—i.e., tipped with pale grayish brown. In the October specimen these feathers are all without the grayish brown tipping.—Sophia C. Mery, 345 S. E. Boston, Bartlesville, Oklahoma 74003, 20 July 1972.

**Band-tailed Pigeon in east-central Oklahoma.**—On 3 December 1972, while I was looking for birds along a dirt road in the Sequoyah National Wildlife Refuge in Sequoyah County, east-central Oklahoma, I had a good look at a Band-tailed Pigeon (*Columba fasciata*). When I first saw the bird it was

flying across a field directly toward a large isolated maple that stood beside the road about 100 yards ahead of me. After it alighted I approached to within about 50 yards. Here, using my binocular, I watched it for about ten minutes. I clearly saw the white crescent on the nape, the narrow dark band on the tail, and the dark-tipped yellow bill. The light was good. A car approaching from the opposite direction flushed the pigeon, which flew off to the southwestward. I know the Band-tailed Pigeon well, for I have seen it often in the Big Bend country of southwestern Texas and in the Chiricahua Mountains of southeastern Arizona.

A Band-tailed Pigeon was taken at Crescent, Logan County, north-central Oklahoma in 1905 (1908, Carter and Trenton, *The Northwestern*, 1: 11; Nice, 1931, *Birds of Oklahoma*, p. 99; Sutton, 1967, *Oklahoma birds*, p. 230), but although the specimen was preserved (it is now at Northwestern State College in Alva, Oklahoma), the record is not entirely satisfactory for neither the name of the collector nor the exact date of collection is known.—James L. Norman, 502 N. 14th St., Muskogee, Oklahoma 74401, 19 January 1973.

**Ruby-throated Hummingbird in southeastern Oklahoma in mid-December.**—In late afternoon on 18 December 1971 (weather mild; air temperature in the 70's from 17 to 19 December), while I was wrapping my yard-light with Christmas decorations, I observed a female or female-like hummingbird, presumably a Ruby-throat (*Archilochus colubris*), feeding at slightly frost-bitten scarlet salvia flowers in my window-planter at Durant, Bryan County, southeastern Oklahoma. Since I was within about 15 feet of the bird I could see very clearly the green upperparts, grayish white underparts, and white tail-corners. Nowhere in the plumage did I see a hint of brown or buff. Year after year I have seen hummingbirds presumed to be Ruby-throats feeding about the salvia or perching just outside the kitchen window. Adult males have been readily identifiable as Ruby-throats, of course, but some females and young birds might, admittedly, have been Black-chinned Hummingbirds (*A. alexandri*). The latest fall date thus far reported for the Ruby-throat in Oklahoma is 27 November 1968, when Henry Walter saw one in Oklahoma City, central Oklahoma (1969, *Audubon Field Notes*, 23: 76). The Rufous Hummingbird (*Selasphorus rufus*) has been observed in winter (August 1971 to 12 January 1972) in Tulsa (Tomer, 1972, *Bull. Oklahoma Orn. Soc.*, 5: 20).—Hazel Badger, 723 N. 18th St., Durant, Oklahoma 74701, 17 January 1972.

**Ruby-throated Hummingbird in northeastern Oklahoma in mid-December.**—From 8 to 23 December 1971 (weather unseasonably mild; air temperature dropped to low of 24° F. on 28 December after what local weather bureau described as "warmest December in six years") a female or female-like hummingbird believed to be a Ruby-throat (*Archilochus colubris*) was observed repeatedly in Tulsa County, northeastern Oklahoma. The bird spent most of its time in the backyard at the James Winneck residence (4658 East 55th Place), where there were three hummingbird feeders—one about 8 feet from the patio door, another at the very rear of the yard, another about half way between the two.

Sally Campbell, Hattie Mae Mangan, Eva Converse, and Alice Hersey reported seeing the bird on 8 December. The Winnecks had, however, been seeing it for some time before that date. On one occasion, when James Winneck was sitting on the patio, the hummingbird approached to within a foot or so

of his face, giving him a good look at the "black bill and black around the eye," the green back, and the grayish white underparts.

For about 15 minutes on 11 December I watched the bird myself—from just inside the patio door—as it fed at the rear feeder and perched on a bare limb close to the feeder. I noted the grayish white throat and breast and white tail-corners, which showed plainly in flight. I saw no rufous or buff anywhere in the plumage.

The latest fall Ruby-throat sighting thus far on record for Tulsa is of a single female or female-like bird seen by C. L. Clote and his wife Mary on 22 October 1959. My husband, Herbert, and I saw a female or female-like bird in Tulsa on 14 October 1970. A Rufous Hummingbird (*Selasphorus rufus*) is known to have spent part of one winter in Tulsa (Tomer, 1972, Bull. Oklahoma Orn. Soc., 5: 20).—Polly Keating, 5213 S. Toledo, Tulsa, Oklahoma 74135, 14 August 1972.

**Late fall sighting of Ovenbird in Oklahoma.**—Through a window at the back of our house in Fletcher, Comanche County, southwestern Oklahoma, I observed an Ovenbird (*Seiurus aurocapillus*) on 28 November 1972. It was feeding with a flock of House Sparrows (*Passer domesticus*) on gravel-covered ground between the house and the garage and was within about 15 feet of the window part of the time. I clearly saw the boldly streaked underparts, the black stripe at each side of the dull orange crown-patch, and the eye-ring. Although the sparrows flew off when they saw me through the window, the Ovenbird continued hunting for food or gravel, bobbing its tail almost constantly as it walked about, eventually off to one side of the garage. It appeared to be in perfect health. The weather was clear, the air temperature a little below freezing.

In mid-afternoon the following day I observed the bird in the same place for about half an hour. At one time it was only about 8 feet from the window. On 1 December my wife Velma saw it at about 07:45; after remaining in full view for about ten minutes it walked under some shrubbery and disappeared. We did not see it again.

The dates are exceptionally late. According to Sutton (1967, Oklahoma birds, p. 513), *Seiurus aurocapillus* has not been recorded in fall in Oklahoma later than 26 September. Data filed at the University of Oklahoma Bird Range indicate that Dotty M. Goard saw an Ovenbird at Bartlesville, Washington County, northeastern Oklahoma on 26 September 1956 and that Letitia Johnson found one dead in Tulsa, Tulsa County, northeastern Oklahoma, on 6 October 1956 (the specimen had, according to John S. Tomer, been dead for some time, so the precise date of occurrence of the living bird is indeterminable). According to the AOU Check-list (1957, p. 504), the Ovenbird winters "from Nuevo Leon, the Gulf coast, southern Georgia, and southern South Carolina south to Parama, northern Colombia, northern Venezuela, and the Lesser Antilles."—Carrol M. Ridgway, Box 493, Fletcher, Oklahoma 73541, 17 January 1973.

**Oklahoma winter records for the Dickcissel.**—On the morning of 8 January 1973 a Dickcissel (*Spiza americana*) visited the feeder that hangs from a large privet bush about 5 feet from the breakfast-room window of our house in Muskogee, Muskogee County, east-central Oklahoma. I clearly saw the red-brown "shoulder patches," the small dark V on the otherwise light yellow throat and breast, and the conspicuous white superciliary line. The bird also

drank briefly at a large clay watering dish on the ground nearby.

According to data filed at the University of Oklahoma Bird Range, the only other wholly acceptable winter record for this species is of a single bird seen repeatedly with a flock of House Sparrows (*Passer domesticus*) in Bartlesville, Washington County, northeastern Oklahoma, by Sophia C. Mery, Doris Williamson, Dotty M. Goard, et al. from 1 to 8 February 1966. The species normally winters well south of Oklahoma—from southern Mexico southward through Central America to central Colombia, southern Venezuela, and the north-eastern part of South America now known as Guiana (1957, AOU Check-list, p. 555).—James L. Norman, 502 N. 14th St., Muskogee, Oklahoma 74401, 23 February 1973.

**First Snow Bunting specimen for Oklahoma.**—In the early afternoon on 21 December 1972—a sunny, comparatively windless day—David Hayward (of Carbondale, Illinois) and I happened upon a Snow Bunting (*Plectrophenax nivalis*) at Westheimer Field, the airport just northwest of Norman, Cleveland County, central Oklahoma. The bird was foraging with a small flock of Lapland Longspurs (*Calcarius lapponicus*) and Horned Larks (*Eremophila alpestris*) among thin grass and short weeds near a little-used landing strip. Since it allowed us to approach rather closely, we called the rest of our party—Joel Greenberg of Mt. Prospect, Illinois, Brad Carlton of Oklahoma City, and Warren D. Harden of Norman—over to observe it. Later that afternoon, George M. Sutton collected it. The specimen (UOMZ 7394) proved to be an adult female (weight 33.1 grams; fairly fat; gizzard and esophagus packed with small seeds and grit; skull fully ossified; bill straw yellow with dark brownish gray tip; legs and feet black). It represents the well known, wide-ranging nominate race (wing 101 mm., tail 63).

The Snow Bunting is listed as a "rare accidental visitor" to the Salt Plains National Wildlife Refuge in Alfalfa County, north-central Oklahoma, but no one seems to know what the listing is based on; the only published record for the state is of three birds observed flying overhead by L. W. Oring near Kenton, Cimarron County, far western Oklahoma on 22 December 1960 (1961, Audubon Field Notes, 15: 243-44; Sutton, 1967, Oklahoma birds, pp. 641-42). The presence of the species in central Oklahoma on 22 December 1972 may well have resulted from severe weather in the Southern Great Plains. Norman had a very heavy snowfall on 18 November, followed by several days of unusually cold weather.—Theodore A. Parker III, 521 N. President Ave., Lancaster, Pennsylvania 17603, 22 February 1973.

**Snow Bunting in Craig County, Oklahoma.**—On 15 December 1972 (air temperature 18° F. about noon), just after a snowstorm and at the first of a protracted stretch of bad weather, my sister Sue and her husband, Lee V. Cruce, saw a Snow Bunting (*Plectrophenax nivalis*) in their yard 1 mile south of Ketchum, Craig County, northeastern Oklahoma. The bird fed on the ground and at three low feeders (each about 6 inches above ground) at which Dark-eyed Juncos (*Junco hyemalis*), Harris's Sparrows (*Zonotrichia querula*), White-crowned Sparrows (*Z. leucophrys*), and House Sparrows (*Passer domesticus*) had been feeding for some time; it continued to visit the yard for several days, though it was not there continuously. Between 15 and 24 December the Cruces saw three Snow Buntings in their yard from time to time, though

they did not record the dates of the sightings. On 24 December they saw one bunting only, an adult male. This bird I photographed that day, using 8 mm. motion picture film. Though the bird image in the brief footage is not in sharp focus, its shape and color pattern are, according to George M. Sutton, who has seen the film, unmistakable.

The Cruces saw one Snow Bunting occasionally during January, February, and March 1973, but — not realizing how rare the bird was in Oklahoma— they did not record the dates. They saw it again on 27 April (46° F.) and 30 April (70° F.), on which dates the weather was cloudy and windy; on 4 May (70° F.), when the sky was clear; on 5 May (69° F.), when the sky was "party cloudy"; on 10 May (62° F.), when the sky was clear; and on 11 May (64° F.), when the weather was stormy. Throughout this period the bird usually fed within 15-20 feet of the house. It often perched on a pile of limbs that had broken off during icestorms. On 5 May it drank at a "hub-cap fountain" with several Harris's Sparrows. After 11 May the Cruces saw neither the bunting nor any of the Harris's Sparrows again.—Claudia Davis, *Box 21, Vinita, Oklahoma 74301, 20 August 1973.*

FROM THE EDITORS: The editors wish to thank Louis E. McGee and his wife Janet for preparing the index for Volume VI; they are grateful also to Warren D. Harden and Mitchell Codding for help with composing the issues and with reading proof.

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